5.15 Equation of a Line: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The line has equation $y = -x + 4$.

(a) Work out y when x = 2. **(1)**

.....

(b) Work out y when x = -1. **(1)**

.....

(Total for Question 1 is 2 marks)

---

2 A straight line has equation $y = 5x - 3$.

(a) Write down the gradient of the line. **(1)**

.....

(b) Write down the coordinates of the point where the line crosses the y-axis. **(1)**

.....

(Total for Question 2 is 2 marks)

---

3 Point C has coordinates (2, 3) and point D has coordinates (8, 21). Find the gradient of the line CD.

(Total for Question 3 is 2 marks)

© Revision Library | revisionlibrary.co.uk

4 Which of these lines is parallel to the line with equation y = 4x - 1?

- ☐ A) y = 4x + 5
- ☐ B) y = -4x + 5
- ☐ C) y = (1/4)x - 1
- ☐ D) 4y = x - 8

(Total for Question 4 is 1 mark)

---

5 Find the equation of the line passing through the points (-1, 2) and (3, 10). Give your answer in the form y = mx + c.

(Total for Question 5 is 3 marks)

---

6 Line L1 has equation y = 2x + 3. Line L2 has equation 4x - 2y = 6. Determine whether L1 and L2 are the same line, are parallel but different lines, or are neither. Justify your answer.

(Total for Question 6 is 2 marks)

---

7 Show that the point (4, 11) lies on the line with equation y = 3x - 1.

(Total for Question 7 is 2 marks)

---

8 A taxi charges £2 plus £3 per mile. Write a formula for the total cost, C pounds, after m miles.

(Total for Question 8 is 2 marks)

© Revision Library | revisionlibrary.co.uk

9 Line L has equation $2y = 6x + 8$. Write the equation of L in the form $y = mx + c$, and state the gradient and the y-intercept of L.

(Total for Question 9 is 3 marks)

---

10 The line L has equation $3x - 2y + 6 = 0$.

(a) Work out the gradient of L. **(1)**

.....

(b) Find the equation of the line through (2, 1) parallel to L. Give your answer in the form $y = mx + c$. **(2)**

.....

(c) Find the equation of the line through (2, 1) perpendicular to L. Give your answer in the form $y = mx + c$. **(1)**

.....

(Total for Question 10 is 4 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 5.15 Equation of a Line: 30-minute Pack

Question 1

(a) y = 2 cao **B1**

(a) Answer: 2

(b) y = 5 cao **B1**

(b) Answer: 5

Question 2

(a) 5 cao **B1**

(a) Answer: 5

(b) (0, -3) cao **B1**

(b) Answer: (0, -3)

Question 3

(21 - 3) / (8 - 2) oe correct substitution into the gradient formula **M1**

3 cao **A1**

Answer: 3

Question 4

A cao **B1**

Answer: A) y = 4x + 5

Question 5

find gradient m = (10 - 2)/(3 - (-1)) = 8/4 = 2 **M1**

substitute a point into y = 2x + c to find c **M1**

y = 2x + 4 cao **A1**

Answer: y = 2x + 4

Question 6

rearranges L2 to y = 2x - 3 oe **M1**

cao: states L1 and L2 are parallel but different lines, since both have gradient 2 but different y-intercepts (3 and -3) **A1**

Answer: Parallel but different lines (both have gradient 2, but y-intercepts are 3 and -3)

Question 7

substitutes x = 4 into y = 3x - 1 **M1**

cso: obtains y = 11, matching the given point, so (4, 11) lies on the line **A1**

Answer: y = 3(4) - 1 = 11, so (4, 11) lies on the line

Question 8

3m or 2 identified **M1**

C = 3m + 2 oe **A1**

Answer: C = 3m + 2

Question 9

divides both sides by 2, e.g. y = 3x + 4 oe **M1**

gradient = 3 **A1**

y-intercept = 4 oe (0, 4) **A1**

Answer: y = 3x + 4; gradient = 3; y-intercept = (0, 4)

Question 10

(a) 3/2 cao **B1**

(a) Answer: 3/2

(b) use gradient 3/2 and substitute (2,1) into y = 3/2 x + c to find c **M1**

(b) y = 3/2 x - 2 cao **A1**

(b) Answer: y = 3/2 x - 2

(c) y = -2/3 x + 7/3 cao **A1**

(c) Answer: y = -2/3 x + 7/3

© Revision Library | revisionlibrary.co.uk